Title of the Invention: Methodology of Quantification of Transmission Probability for Minority Carrier Collection in a Semiconductor Chip
Inventor's Name: Watson et al.
Docket No./Application No.: 10/711,143

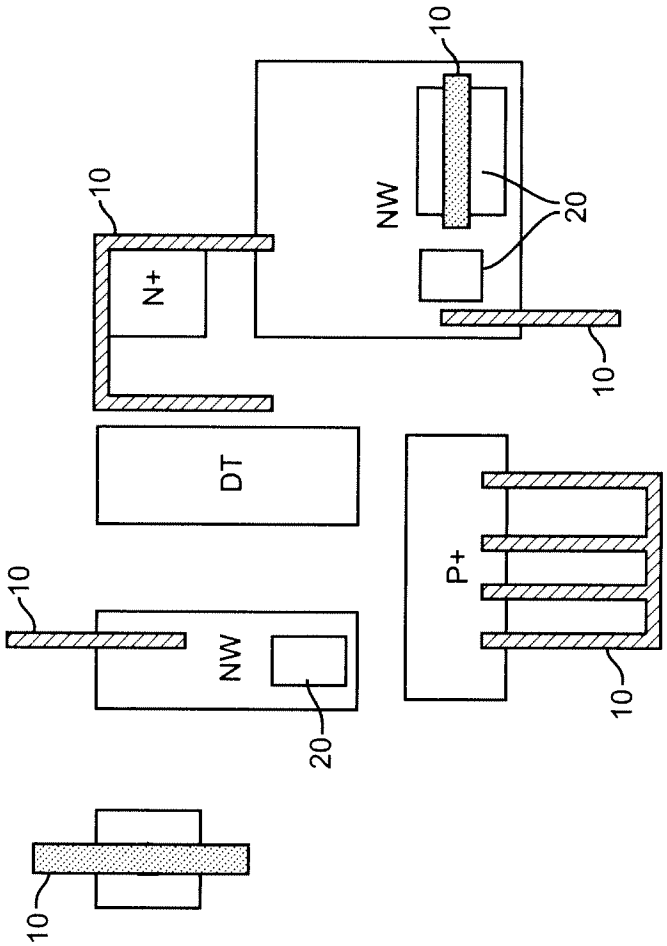

Figure 1

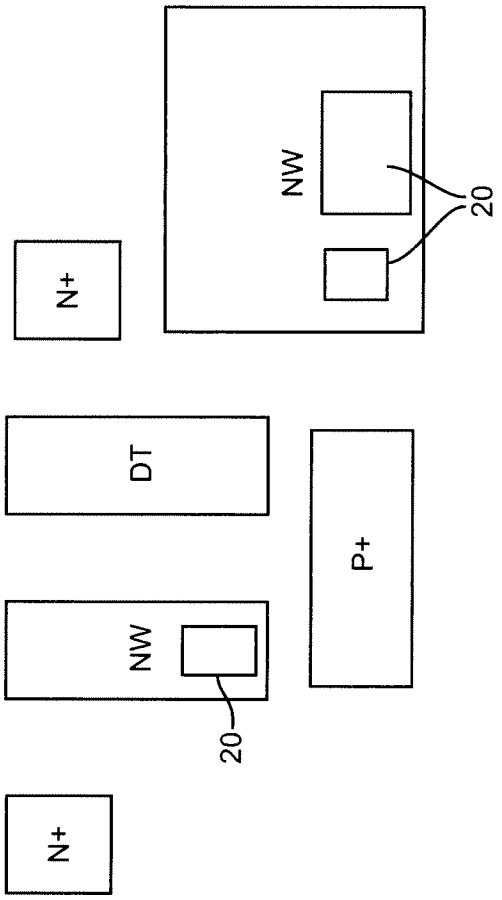

Figure 2

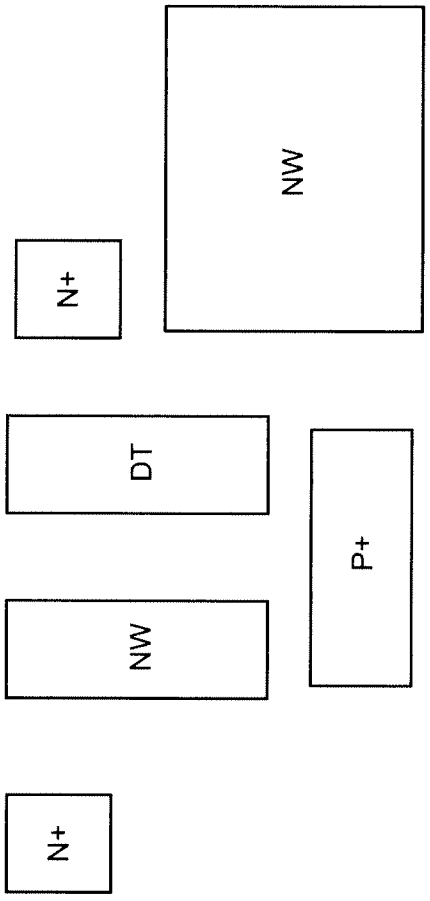

Figure 3

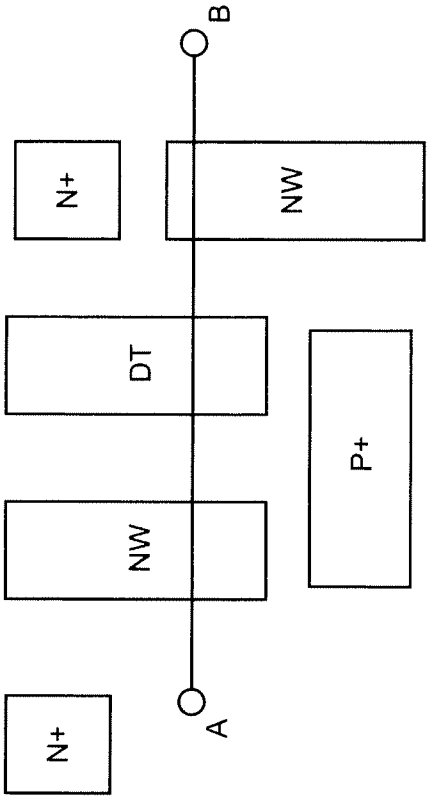

Figure 4

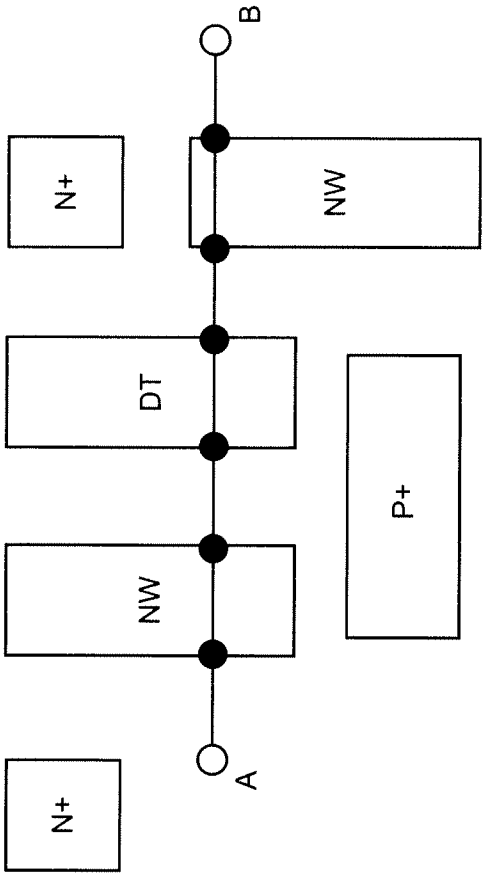

Figure 5A

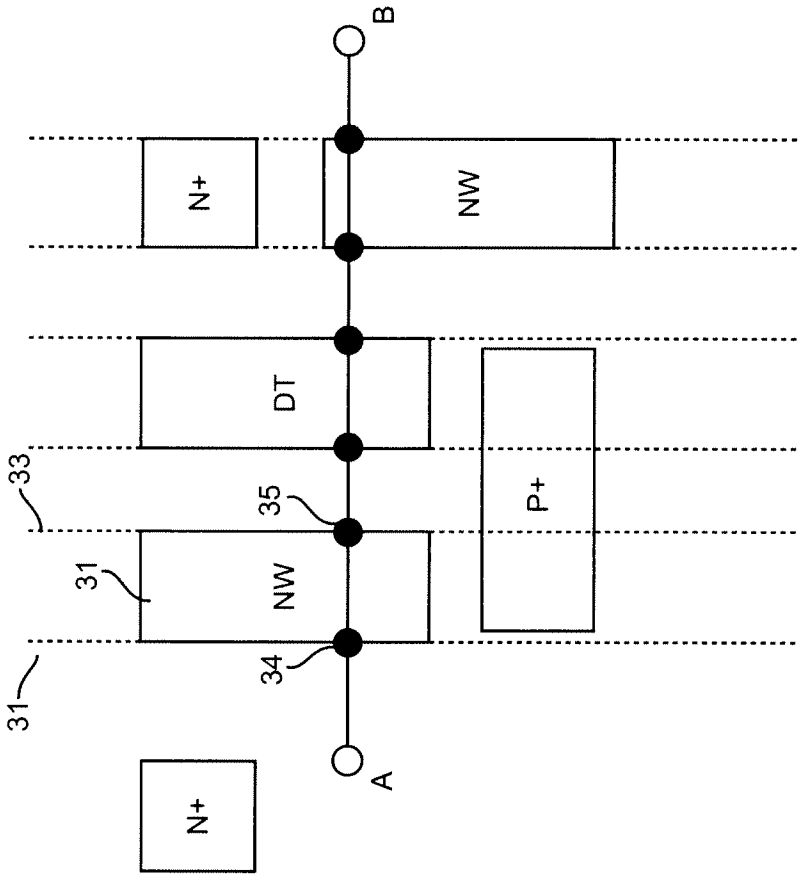

Figure 5B

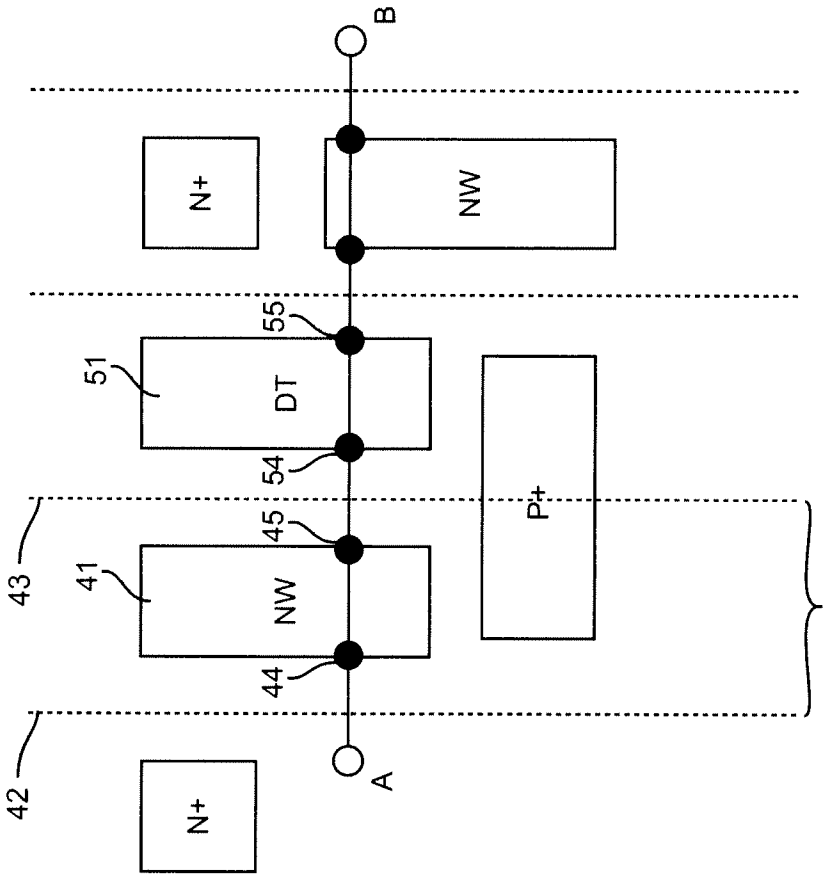

Figure 5C

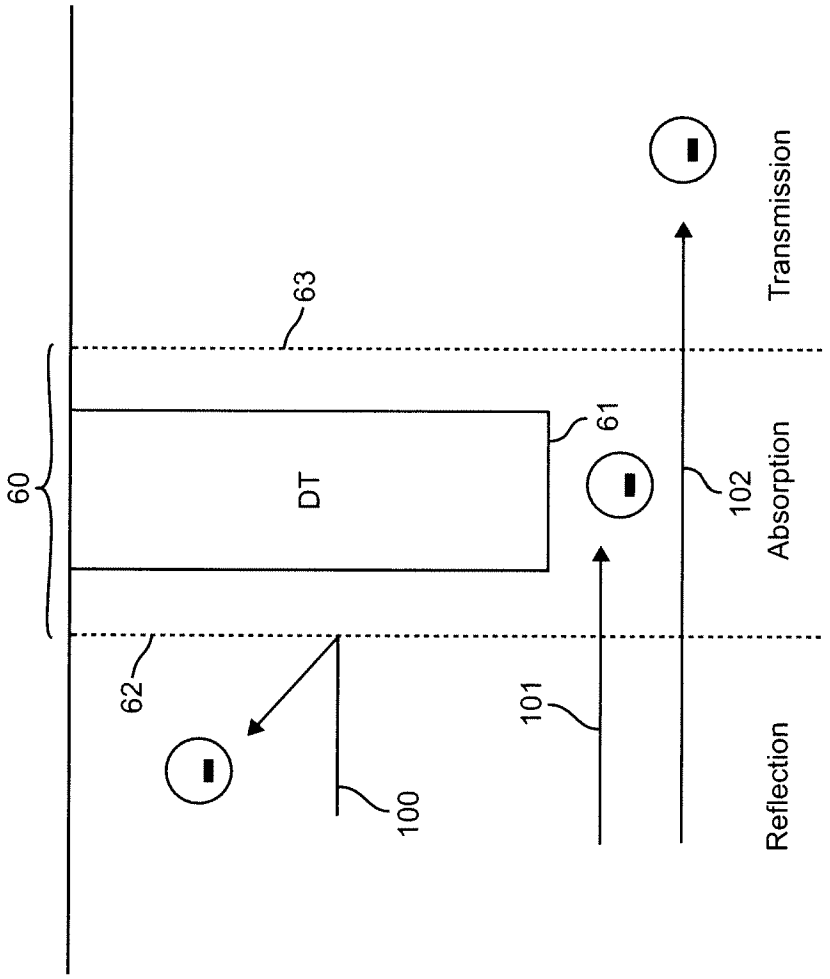
60
63
DT
61
62
100
101
102
Transmission
Absorption
Reflection

Figure 6A

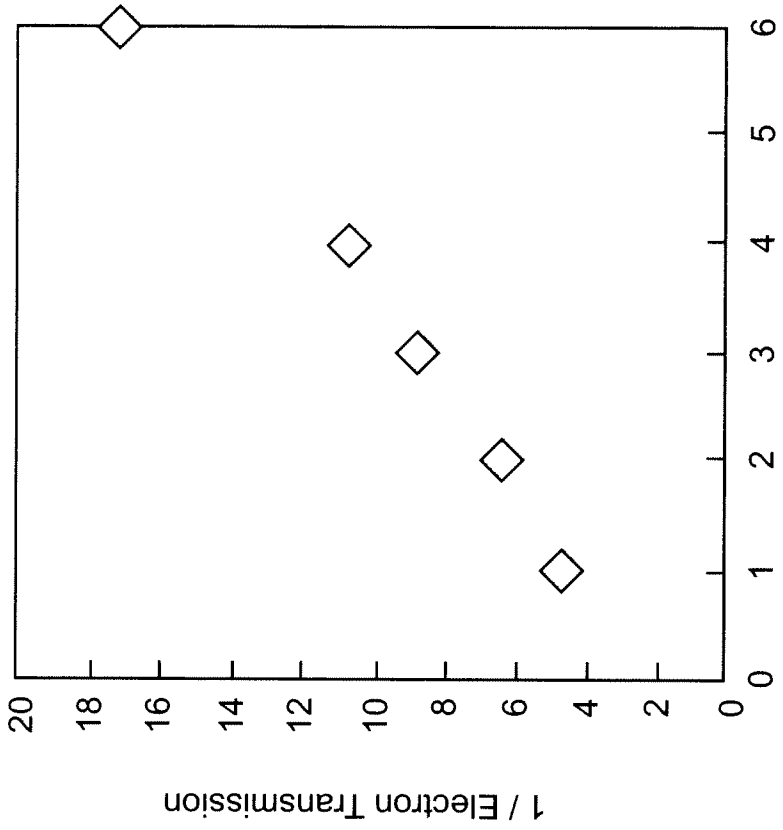
1 / Electron Transmission
0
2
4
6
8
10
12
14
16
18
20
Trench Depth (μm)
0
1
2
3
4
5
6

Figure 6B

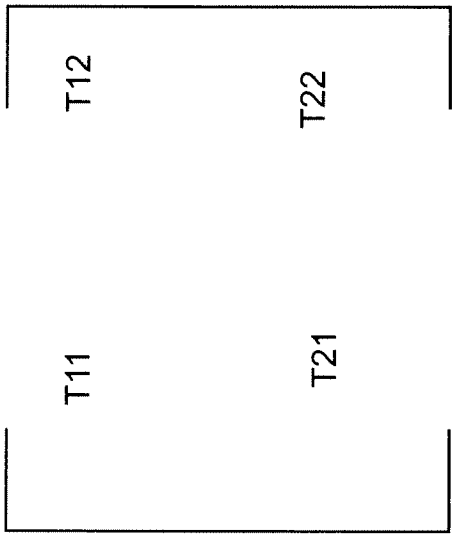

Figure 6C

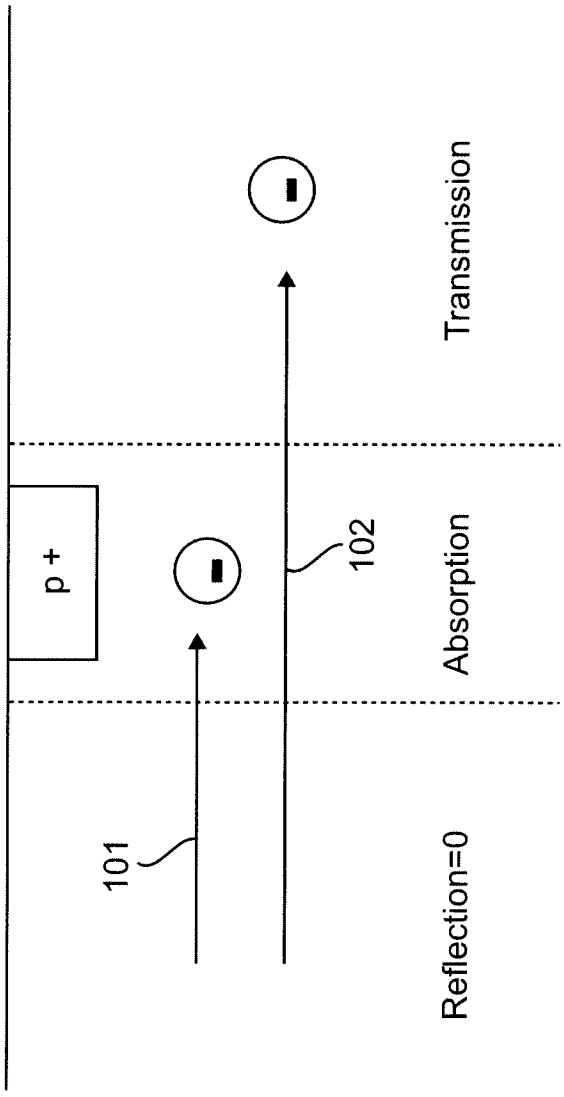

Figure 7

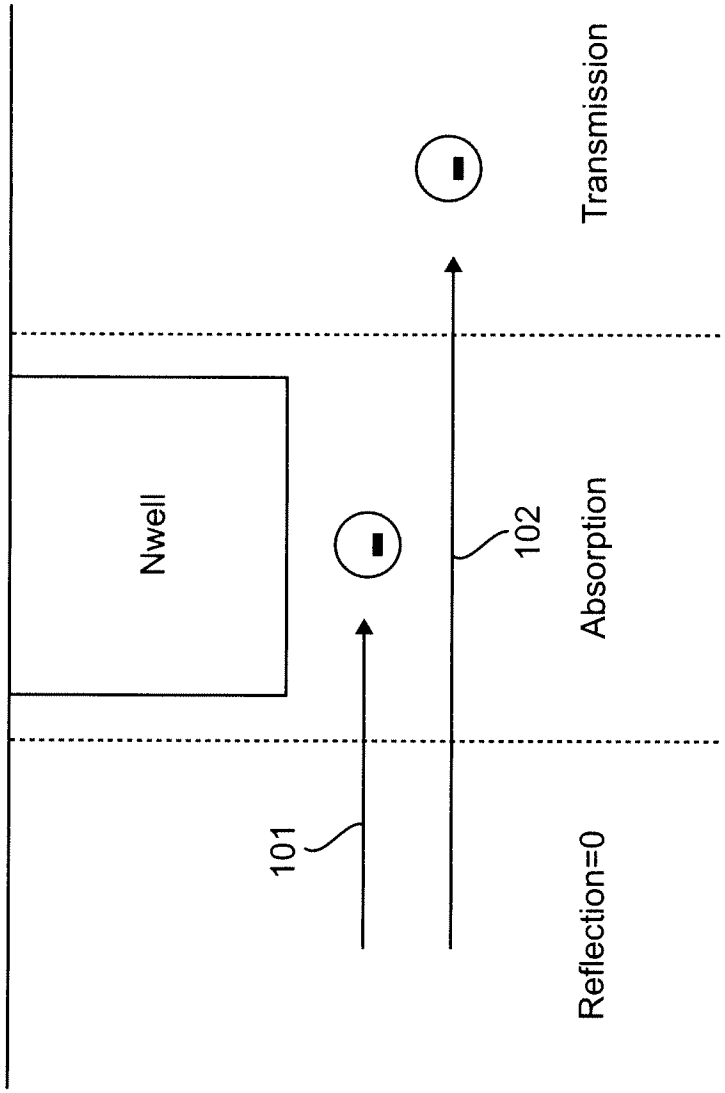

Figure 8

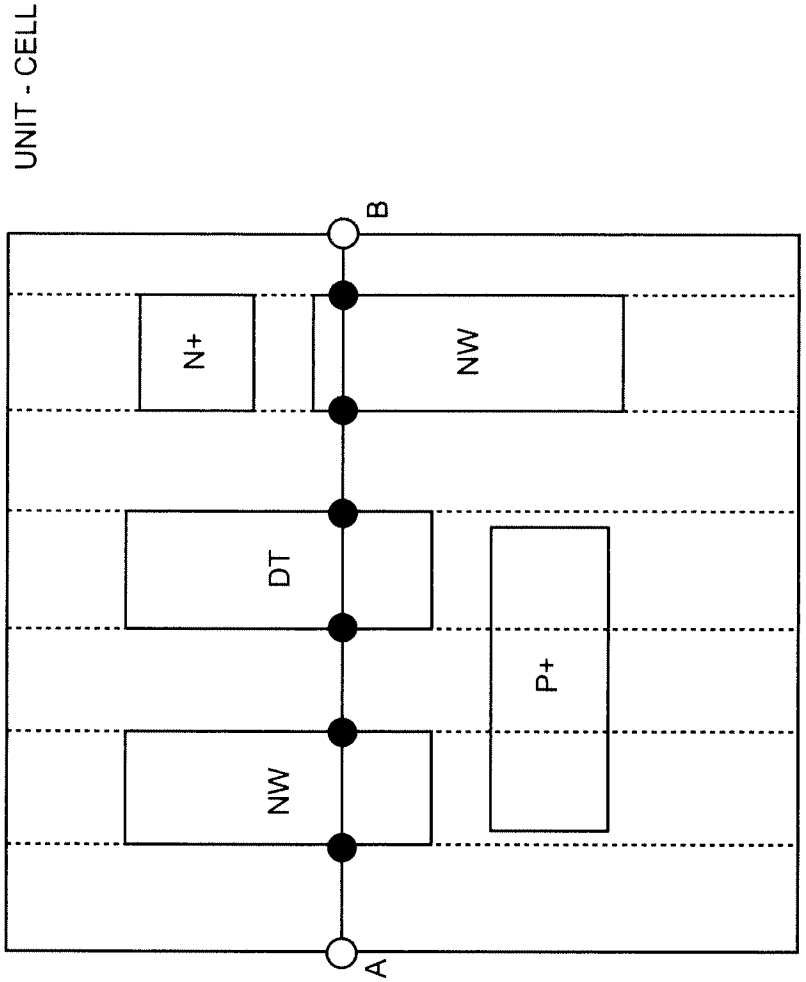

Figure 9

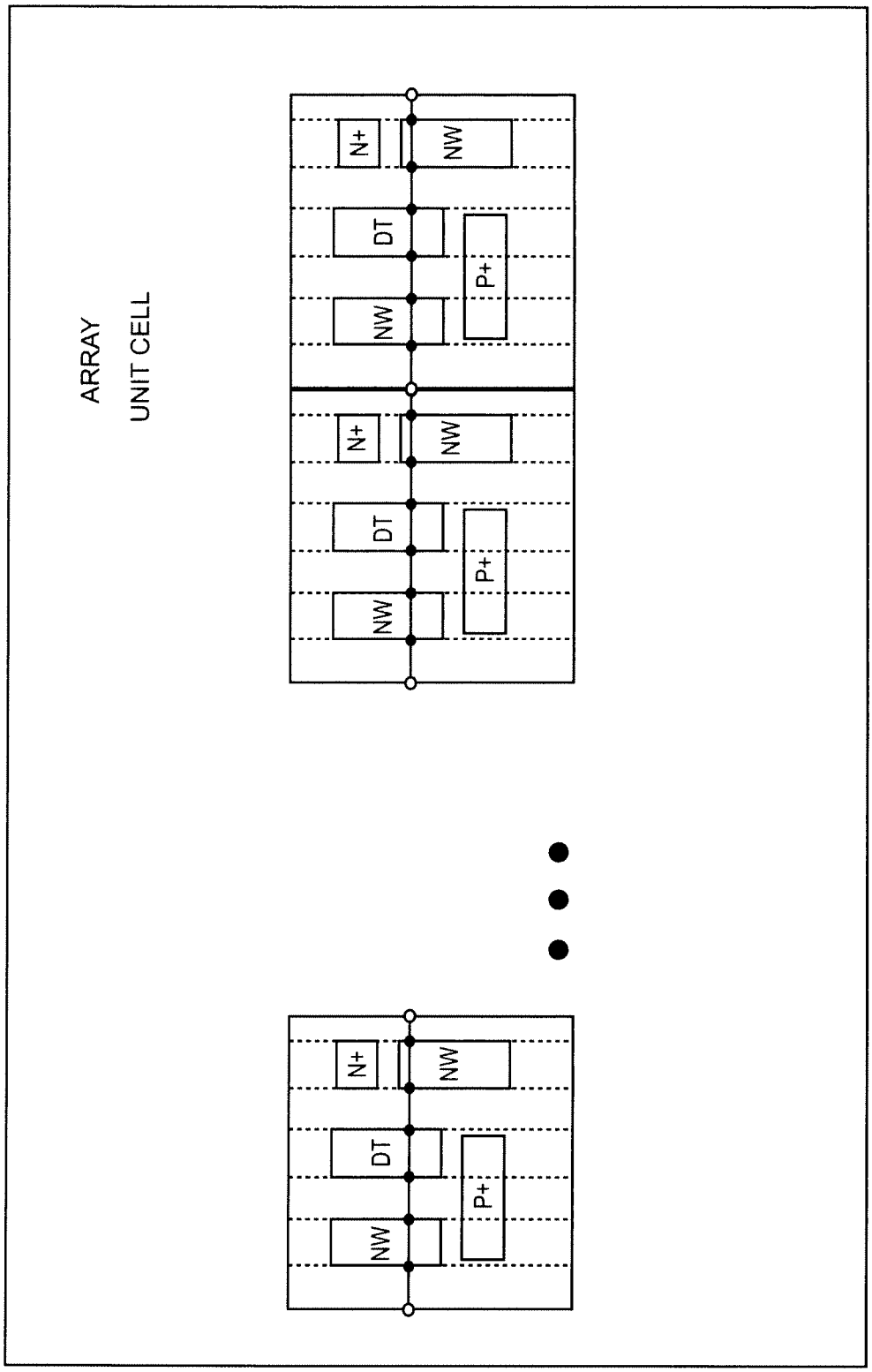

Figure 10

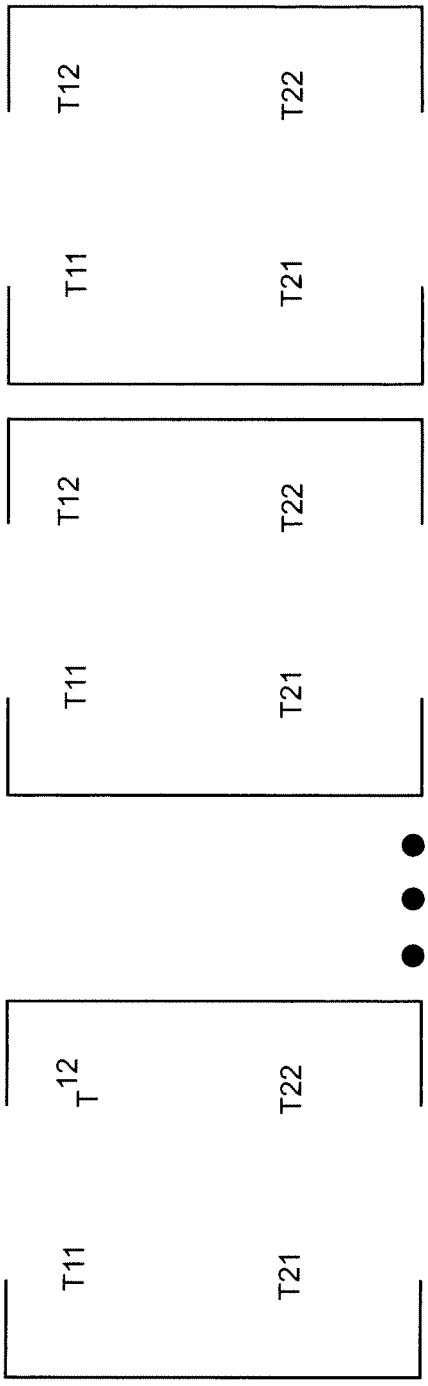

Figure 11

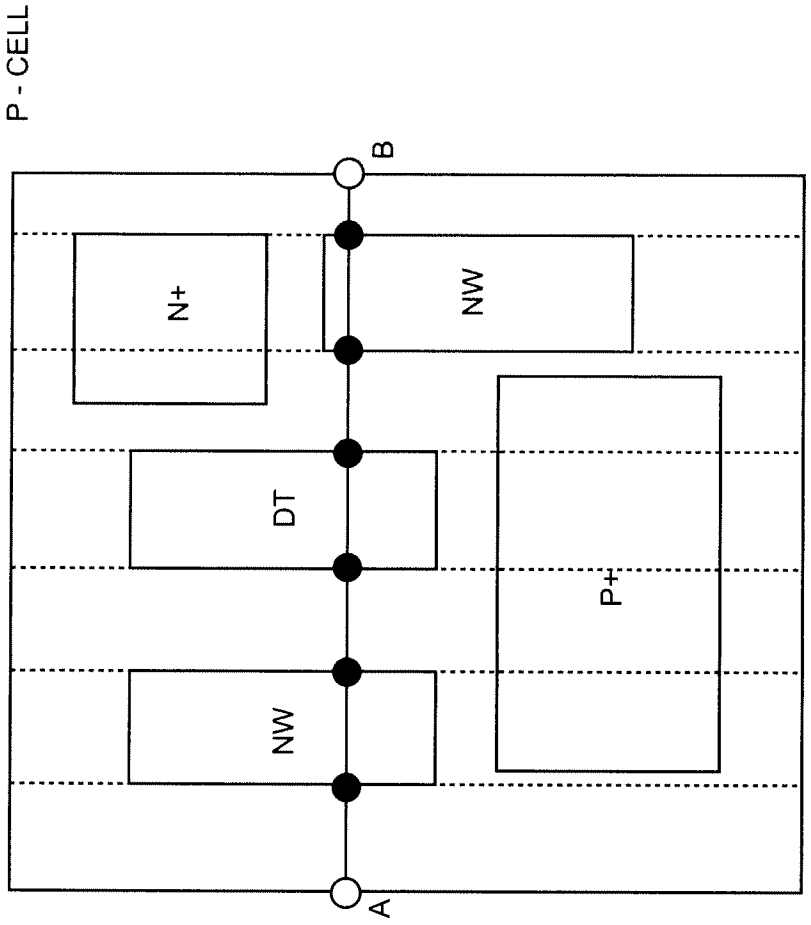

Figure 12

Title of the Invention: Methodology of Quantification of Transmission Probability for Minority Carrier Collection in a Semiconductor Chip
Inventor's Name: Watson et al.
Docket No./Application No.: 10/711,143

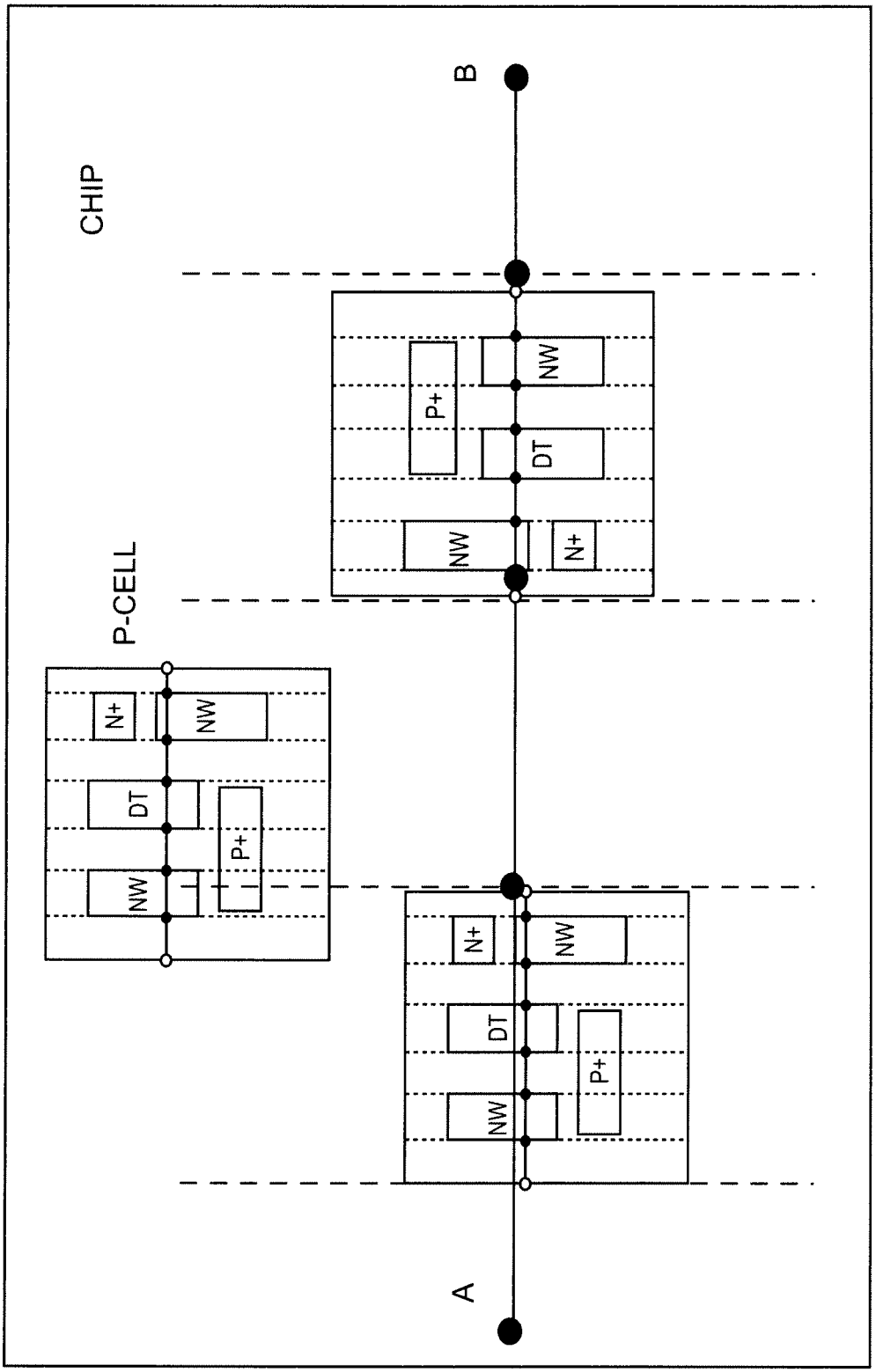

Figure 13

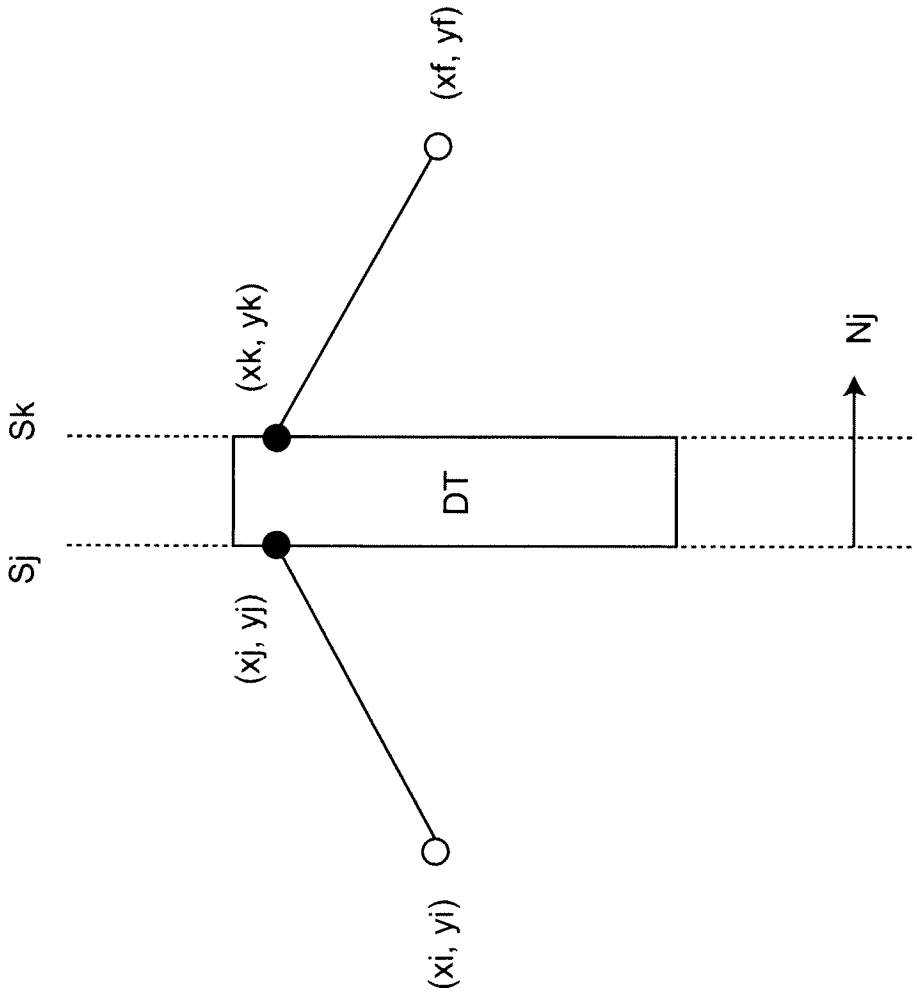

Figure 14

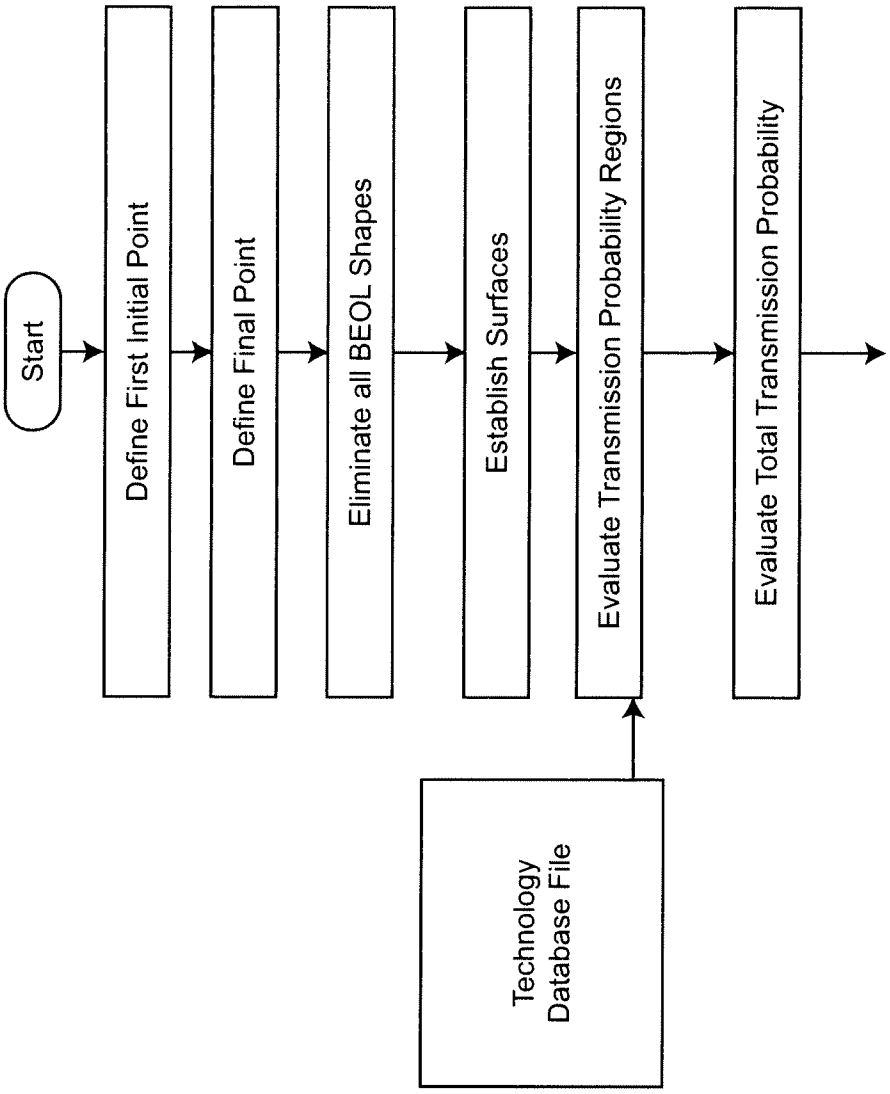
Start
Define First Initial Point
Define Final Point
Eliminate all BEOL Shapes
Establish Surfaces
Evaluate Transmission Probability Regions
Evaluate Total Transmission Probability
Technology Database File

Figure 15A

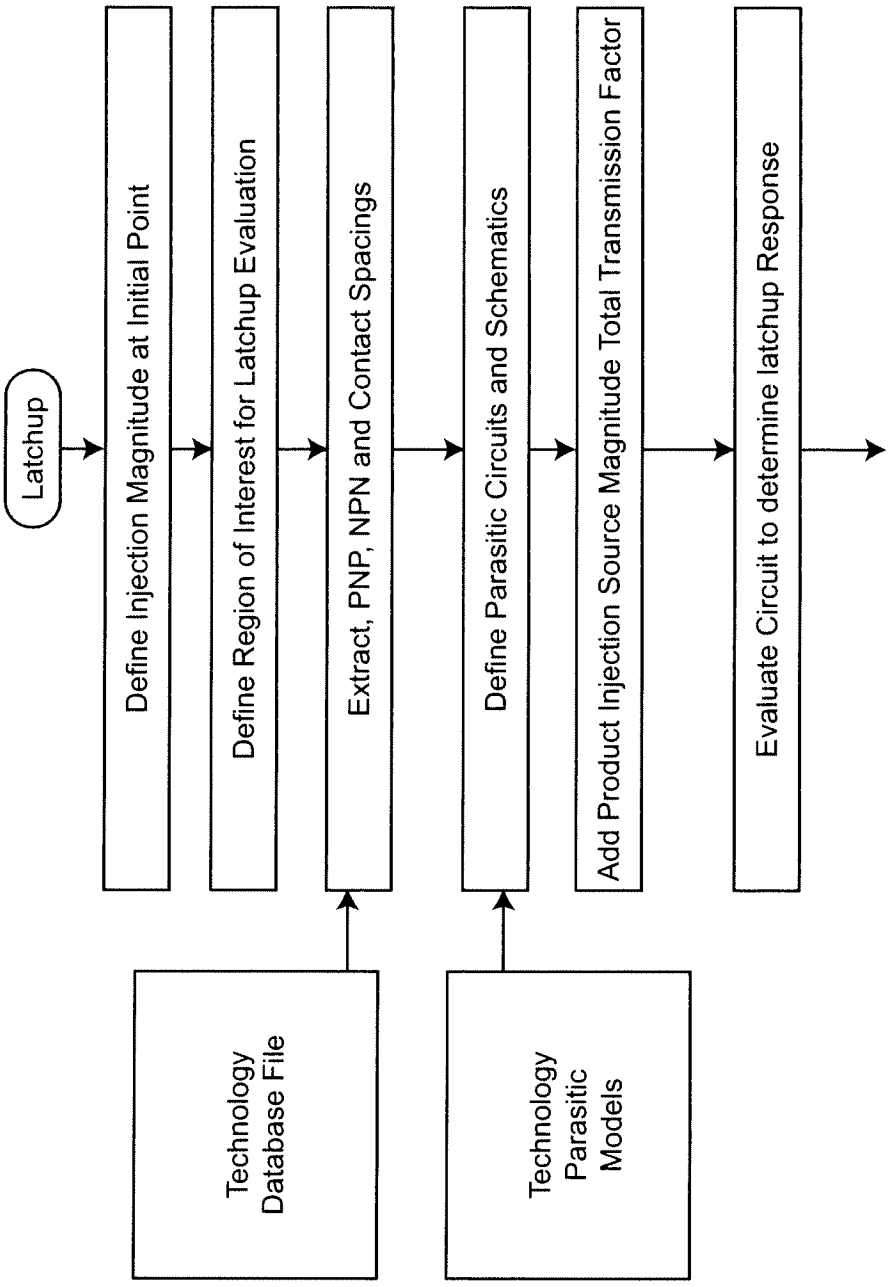
Latchup
Define Injection Magnitude at Initial Point
Define Region of Interest for Latchup Evaluation
Extract, PNP, NPN and Contact Spacings
Define Parasitic Circuits and Schematics
Add Product Injection Source Magnitude Total Transmission Factor
Evaluate Circuit to determine latchup Response
Technology Database File
Technology Parasitic Models

Figure 15B

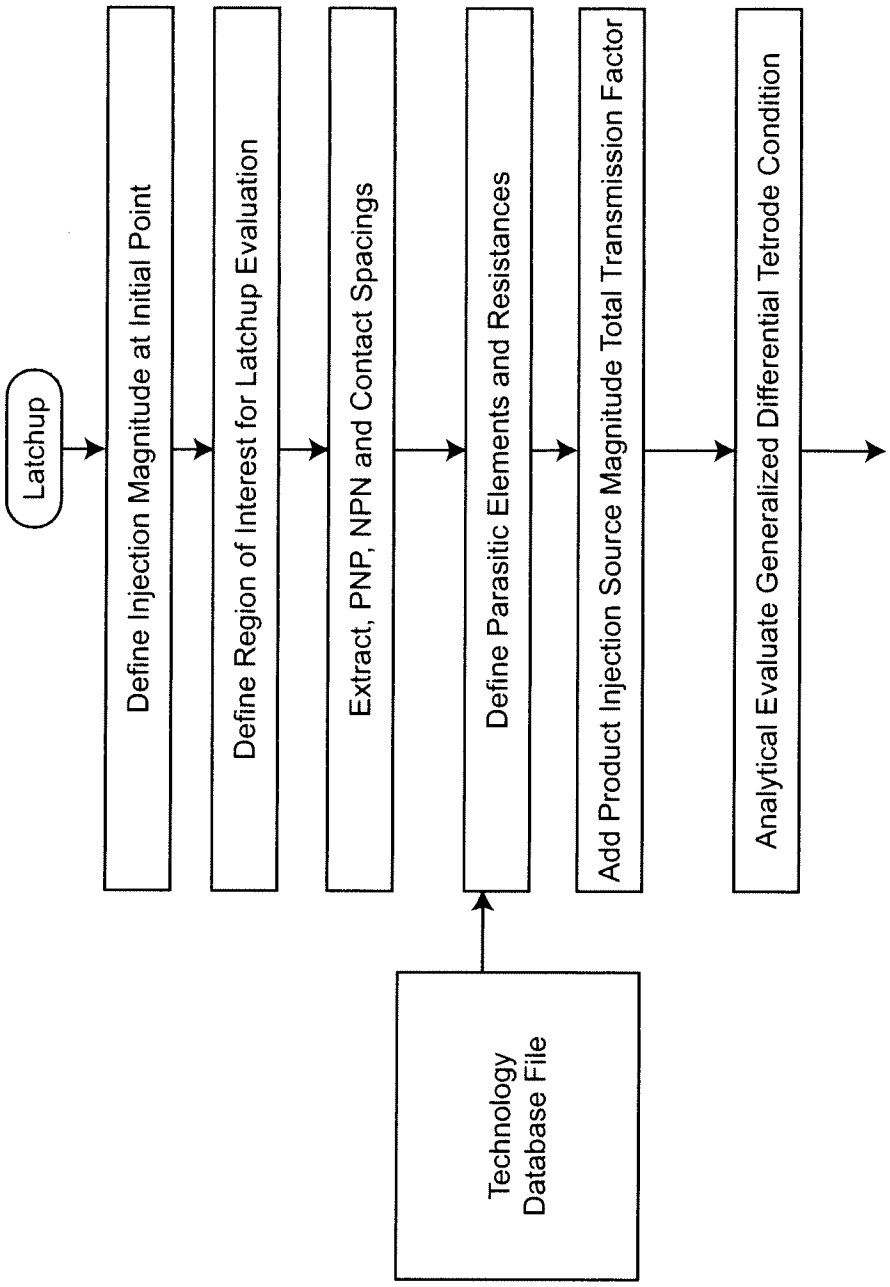
Latchup
Define Injection Magnitude at Initial Point
Define Region of Interest for Latchup Evaluation
Extract, PNP, NPN and Contact Spacings
Define Parasitic Elements and Resistances
Add Product Injection Source Magnitude Total Transmission Factor
Analytical Evaluate Generalized Differential Tetrode Condition
Technology Database File

Figure 15C

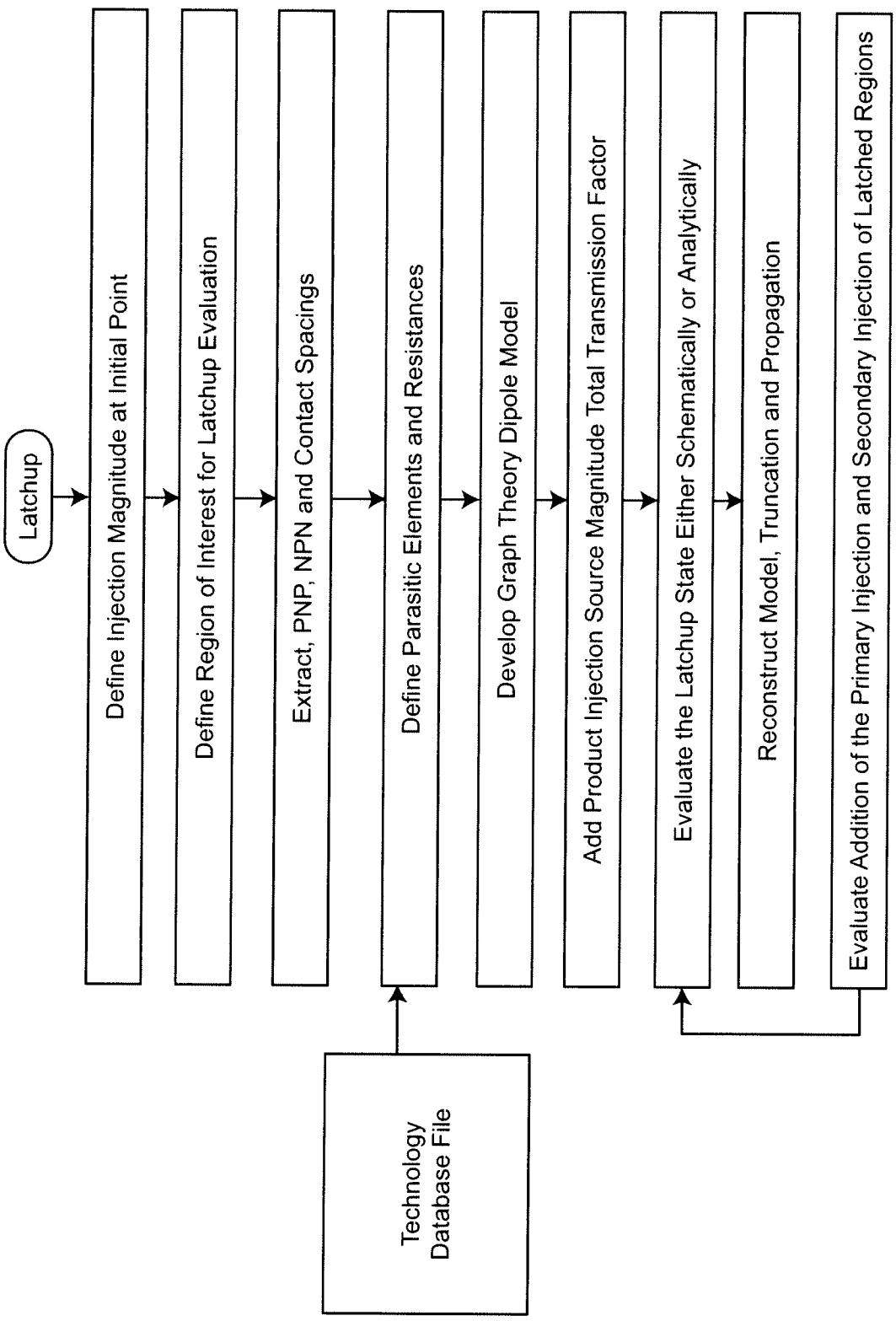
Latchup
Define Injection Magnitude at Initial Point
Define Region of Interest for Latchup Evaluation
Extract, PNP, NPN and Contact Spacings
Define Parasitic Elements and Resistances
Develop Graph Theory Dipole Model
Add Product Injection Source Magnitude Total Transmission Factor
Evaluate the Latchup State Either Schematically or Analytically
Reconstruct Model, Truncation and Propagation
Evaluate Addition of the Primary Injection and Secondary Injection of Latched Regions
Technology Database File

Figure 15D